

**SOW - Statement of Work – BNE**  
**(2) 95 GHZ Externally Referenced Phase Locked Oscillators or Equal**  
**NB688000-15-04214**

**BACKGROUND:**

The Time and Frequency Metrology Group is a part of the Time and Frequency Division of NIST. This group has the world's most advanced measurement and calibration facilities for characterizing modulation noise components in oscillators and frequency synthesizers. It engages in many activities to determine the cause of various kinds of electronic noise for the purpose of isolating and reducing it, leading to improved performance of components, instruments and techniques that are often necessary in new applications.

**PURPOSE:**

This procurement supports the development of a w-band vibrometer. A w-band unbalanced phase interferometer will be used to measure thermo-acoustic waves generated in a sample. The 95 GHz phase locked oscillators will be used for a 95 GHz phase noise measurement and low phase noise is required so that the source does not limit the resolution of the measurement.

**DELIVERABLES:**

Two (2) 95 GHz phase locked oscillators that lock to a 100 MHz external reference.

**TECHNICAL SPECIFICATIONS:**

**95 GHZ Internally Referenced Phase Locked Oscillators**

- 95 GHz +/- 1 GHz
- 17 dBm Output Power minimum
- External 100 MHz Reference Input (reference not included).
- WR-10 Waveguide
- Harmonics < -20 dBc
- Spurious < -75 dBc
- Locking indicator (desired but not required)
- Phase Noise: using a provided external 100 MHz oscillator.

Offset Frequency(Hz)	100 MHz Ext Reference Phase Noise (dBc/Hz)	Maximum 95 GHz Phase Noise (dBc/Hz)
1	-75	-10
10	-105	-40
100	-135	-70
1,000	-162	-95
10,000	-183	-100
100,000	-188	-100

TECHNICAL CONSIDERATIONS: The most important specifications are phase noise, output power, lead time.